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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,938	10/19/2004	Goran Sundholm	U 015416-8	8709

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EXAMINER	
ALI, HYDER	

ART UNIT	PAPER NUMBER
3747	

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/511,938	SUNDHOLM, GORAN	
	Examiner	Art Unit	
	HYDER ALI	3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,9-12,14,17,20 and 21* is/are rejected.

7)☒ Claim(s) *2-8,13,15,16,18,19 and 22-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

1. Claims 1,9-12,14,17,20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Paro et al (EP 1,205,659).

As to Claim 1, Paro et al discloses in a method controlling intake air humidification spraying apparatus, the apparatus comprising at least two spraying nozzles (4,4') for spraying a liquid into the intake air, the method characterized in that when an amount of the liquid to be supplied through the spraying nozzles increases, liquid flow passages are opened for more nozzles (4,4') and when an amount of the liquid to be supplied through the nozzles (4,4') decreases, liquid flow channels are closed at least for one of the spraying nozzles (4,4').

As to Claim 9, Paro et al discloses the amount of liquid to be supplied through the spraying nozzles (4,4') is adjusted as a function of the engine load.

As to Claim 10, Paro et al discloses a liquid mist is sprayed through the spraying nozzles (4,4').

As to Claim 11, Paro et al discloses the liquid mist is injected at a pressure of 10-300 bar (inherently and necessarily present for the operation of the nozzles 4,4')

As to Claim 12, Paro et al discloses maximum droplet size of the liquid mist injected is typically 200 micrometers (inherently and necessarily present in a nozzles 4,4').

As to Claim 14, Paro et al discloses in apparatus supplying a liquid into intake air of an engine, the improvements comprising: at least two spraying nozzles for spraying a liquid as a mist into a duct for the intake air; at least two feed channels with valve elements respectively leading to the spraying nozzles; a control system giving impulses on the basis of which the valve elements are opened and closed; and luquid supply means for supplying the liquid into the feed channels.

As to Claim 17, Paro et al discloses means for 12 keeping the flow resistance constant.

As to Claim 20, Paro et al discloses liquid supply means comprise a liquid source 6 and a pump (not shown).

As to Claim 21, Paro et al discloses control system 12 has been adapted to control the apparatus on the basis of engine load.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1,9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandberg et al (US 4,558,665) in view of Harima (JP3-18618).

Sandberg et al discloses in a method controlling intake air humidification spraying apparatus, the apparatus comprising at least two spraying nozzles (8,8,8,8) for spraying a liquid into the intake air; wherein the water injection valves (8,8,8,8) are regulated by an electronic control unit 10 (FIG. 2) which calculates, by the guidance of input signals representing crankshaft position, load and r.p.m., the time for initiating the injection and the amount of water to be injected at each engine speed and load. **See col. 2, lines 46-51.**

Sandberg et al does not disclose when an amount of the liquid to be supplied through the spraying nozzles increases, liquid flow passages are opened for more nozzles and when an amount of the liquid to be supplied through the nozzles decreases, liquid flow channels are closed at least for one of the spraying nozzles.

Harima discloses a controller 19 controlling electromagnetic valves 8 for selectively opening/closing any number of passages for nozzles (7).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Sandberg et al by employing a controller 19 controlling electromagnetic valves 8 for selectively opening/closing any number of passages for nozzles (7) as taught by Harima. The motivation to do so would have been to selectively opening/closing passages in lieu of selectively opening/closing nozzles.

As to Claim 9, Sandberg et al discloses the amount of liquid to be supplied through the spraying nozzles (8,8,8,8) is adjusted as a function of the engine load.

As to Claim 10, Sandberg et al discloses a liquid mist is sprayed through the spraying nozzles (8,8,8,8).

As to Claim 11, Sandberg et al discloses the liquid mist is injected at a pressure of 10-300 bar (inherently and necessarily present for the operation of the nozzles 8,8,8,8)

As to Claim 12, Sandberg et al discloses maximum droplet size of the liquid mist injected is typically 200 micrometers (inherently and necessarily present in a nozzles 8,8,8,8).

3. Claims 14,17,20,21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knudsen (US 3,779,213) in view of Maggio (US 4,438,731).

Knudsen discloses in apparatus supplying a liquid into intake air of an engine, the improvements comprising: at least two spraying nozzles 29 for spraying a liquid as a mist into a duct 17 for the intake air; at least two feed channels with valve elements (32,32,32) respectively leading to the spraying nozzles 29; and liquid supply means 26 for supplying the liquid into the feed channels.

Knudsen does not disclose a control system giving impulses on the basis of which valve elements are opened and closed.

Maggio discloses a control system 33 giving impulses on the basis of which valve elements (A,B,C) are opened and closed.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the invention of Knudsen by employing a control system 33 giving impulses on the basis of which valve elements (A,B,C) are opened and closed as taught by Maggio. The motivation to do so would have been for a cooling water injection quantity from a cooling water injection nozzle is thereby controlled.

As to Claim 17, Knudsen discloses means for 29 keeping the flow resistance constant.

As to Claim 20, Maggio discloses liquid supply means comprise a liquid source 26 and a pump (P3).

As to Claim 21, Maggio discloses control system 33 has been adapted to control the opening/closing of the valves (A,B,C) on the basis of engine load (throttle 15).

Allowable Subject Matter

Claims 2-8,13,15,16,18,19 and 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection. Further Applicant's arguments, see pages 9 and 10, filed 4/10/2006, with respect to claims 1-24 have been fully considered and are persuasive. Therefore this action is made **Non-Final.**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HYDER ALI whose telephone number is (571) 272-4836. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Kirk Cronin can be reached on (571) 272-4536. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hyder Ali

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Stephen K. Cronin
Primary Examiner
SPE 3747